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IS : 8182 - 1976

Indian Standard
CODE OF HYGIENIC CONDITIONS FOR
PROCESSED MEAT PRODUCTS

UDC 664.91 : 613.6



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AMENDMENT NO. 1 JANUARY 1984

TO

IS:8182-1976 CODE OF HYGIENIC CONDITIONS
FOR PROCESSED MEAT PRODUCTS

Alteration

(Page 13, clause 4.6.3) - Substitute the following for the existing clause:

'4.6.3 All employees shall be inoculated against typhoid and paratyphoid A disease on their first appointment and thereafter once in every five years. In case of epidemic, all workers shall be inoculated. A record shall be maintained.'

(AFDC 36)

Reprography Unit, ISI, New Delhi, India

Indian Standard

CODE OF HYGIENIC CONDITIONS FOR PROCESSED MEAT PRODUCTS

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AFDC 36

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Indian Standard

CODE OF HYGIENIC CONDITIONS FOR PROCESSED MEAT PRODUCTS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 August 1976, after the draft finalized by the Food Hygiene, Sampling and Analysis Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Meat products provide a good medium for rapid proliferation of most of the micro-organisms which degrade and alter their composition thus reducing their keeping quality and making them unfit for human consumption. Contamination with micro-organisms causing food poisoning also constitutes additional health hazards. Therefore, meat should be protected from all sources of microbial contamination at various stages of slaughter, handling, processing and distribution. Safe and wholesome meat products can be produced through improved hygienic practices. This code provides guidelines for hygienic handling of meat products at various stages of handling, processing and distribution.

0.3 In the preparation of this code, assistance has been derived from 'Draft code of hygienic practice for processed meat products' issued by the Codex Alimentarius Commission (Joint Committee of FAO and WHO), Rome.

0.4 This code is subject to the provisions of the Factories Act, 1948; and the Prevention of Food Adulteration Act, 1954, and the Rules framed thereunder; as amended from time to time.

1. SCOPE

1.1 This code prescribes hygienic requirements for production, handling, packing, storing and transportation of processed meat products to ensure wholesome supply of meat products to the consumers.

1.1.1 It applies to processed meat products including poultry meat.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

IS:8182-1976

2.1 Abattoir — Any building, premises or place licensed as an abattoir by the local authority for the slaughter of animals for human consumption.

2.2 Brand — Any mark or stamp approved by the controlling authority and also includes any tag or label bearing such mark or stamp.

2.3 Cleaning — The removal of unwanted matter.

2.4 Contamination — The direct or indirect transmission of unwanted matters.

2.5 Disinfection — The application of hygienically satisfactory chemical or physical agents or both and processes to clean surfaces with the intention of rendering micro-organisms non-viable.

2.6 Edible — Fit for human consumption.

2.7 Edible Offal — The offals passed as fit for human consumption.

2.8 Establishment — Any premises approved and registered by the local authority in which meat products are prepared, processed, handled, packed or stored.

2.9 Hermetically Sealed — Completely sealed and impermeable to gas.

2.10 Ingredient — Any substance including food additives used in the manufacture or preparation of a meat product.

2.11 Inspector — A properly trained officer appointed by the local authority for the purpose of inspection of meat and meat products and supervision of meat hygiene. The supervision of the inspection of meat hygiene including the inspection of meat and meat products should be the responsibility of a veterinarian.

2.12 Local Authority — A local area authority which may be a municipality, municipal board, municipal corporation, cantonment authority, notified area committee or any other local area authority as may be prescribed by the central or state governments.

2.13 Manager — In relation to an establishment includes any person for the time being responsible for the management of the establishment.

2.14 Meat — Edible part of any mammal slaughtered in an abattoir.

2.15 Meat Product — A product containing meat intended for human consumption.

2.16 Poultry Meat — Edible part of slaughtered domesticated birds including chicken, turkey, duck, goose, guinea-fowl or pigeon.

2.17 Processed — Includes all methods of manufacture and preservation but does not include pre-packaged fresh, chilled or frozen meat cuts or joints.

2.18 Potable Water — Water that is pure and wholesome at the point of usage.

2.19 Protective Clothing — Special garments intended and used as outer wear by persons in an establishment and include head coverings and footwear.

2.20 Unfit for Human Consumption — In relation to meat and meat products means an article that would normally be edible but is inedible because of disease, decomposition or any other condition of the animals or poultry.

3. REQUIREMENTS FOR INGREDIENT

3.1 All meat used in the manufacture of meat products shall be produced under hygienic conditions and shall be subjected to proper inspection prescribed in IS:1982-1971*. Poultry meat shall also be produced under hygienic conditions and should be inspected as prescribed in IS:6559-1972†.

3.2 No meat or other ingredient which has undergone deterioration or any process of decomposition or which has been contaminated with foreign matter to an extent which has made it unfit for human consumption should be used for the processing of meat products.

3.3 All ingredients shall be properly stored and kept well off the floor after receipt in the establishment.

3.4 Where necessary, laboratory tests should be made of the ingredients prior to their being moved into the production area of the establishment.

4. REQUIREMENTS FOR ESTABLISHMENT FACILITIES AND OPERATING CONDITIONS

4.1 Establishment Registration, Construction and Layout

4.1.1 Establishments should be approved and registered by the local authority.

4.1.1.1 Establishments should be located in areas not subject to regular and frequent flooding and be free from undesirable odours, smoke, dust or other contaminants.

*Code of practice for ante-mortem and post-mortem inspection of meat animals (*first revision*).

†Code of practice for ante-mortem and post-mortem inspection of poultry.

4.1.1.2 Establishments should provide adequate working space for satisfactory performance of all operations.

4.1.1.3 The construction should be sound and should ensure adequate ventilation, good natural or artificial lighting and easy cleaning.

4.1.1.4 The buildings and facilities of the establishment should be kept in good repair at all times.

4.1.1.5 The establishment should be so laid out and equipped as to facilitate proper supervision of hygienic measures and performance of inspection and control.

4.1.1.6 The establishment should be of such construction as to protect against the entrance and harbouring of insects, birds, rodents or other vermin.

4.1.1.7 In every establishment there should be a physical separation between departments in which edible and inedible materials are handled.

4.1.1.8 In all rooms in an establishment other than the rooms provided for the accommodation of workers and inspectors:

- a) floors should be of waterproof, nontoxic, nonabsorbent materials, easy to clean and disinfect. These should be nonslip type and without crevices and, except in the case of rooms where meat is frozen or stored frozen, should slope sufficiently for liquids to be drained off to trapped outlets protected by a grill;
- b) walls should be of waterproof, nontoxic, nonabsorbent materials, which are easy to clean and disinfect, smooth and at a height appropriate to the operation conducted; these should be of light colour and washable. The angles between the walls and the angles at the wall to floor junctions should be coved; and
- c) ceilings should be so designed and constructed as to prevent accumulation of dirt and condensation and should be easy to clean.

4.1.1.9 Abattoirs and establishments should have an efficient effluent and waste disposal system which should at all times be maintained in good order and repair. All effluent lines (including sewer systems) should be large enough to carry peak loads. All lines should be water-tight and have adequate traps and vents. Catch-basins, traps, save-alls and sumps should at all times be kept separate and apart from any department in which meat is prepared, handled, packed or stored. Disposal of waste should be effected in such a manner as to avoid contamination of potable water supplies. The effluent lines and the manner of waste disposal should be approved by the local authority.

4.1.1.10 The construction and layout of any chilling room, freezing room, freezer store or freezer should satisfy the requirements of this code.

4.1.2 *Sanitary Facilities and Controls*

4.1.2.1 Every department in which edible meat products are prepared, processed or stored should be used at that time only for that purpose or for the preparation of other edible products subject to the same conditions of hygiene. It should be physically separated from every area used for the handling of inedible material or for other purposes. If the departments are used for processing of non-meat products, the arrangements should be made to ensure that there is no resultant contamination of the meat products.

4.1.2.2 The establishments should be so laid-out and equipped as to ensure that meat and meat products do not come into contact with floors, walls or other fixed structures, except those which are specifically designed for contact with meat.

4.1.2.3 The temperature in any room used for boning and trimming should at no time during working hours exceed 10°C, unless cleaning practices are carried out as provided for in **4.3.4**.

4.1.2.4 An ample supply of potable water under adequate pressure should be provided with adequate facilities for its storage and distribution and with adequate protection against contamination and pollution.

All water used in the establishments should be potable.

Non-potable water may be used for such purposes as producing steam, refrigeration and fire control. Such water should be carried in completely separate lines, identified preferably by colour, and with no cross connection or back siphonage with the lines carrying potable water.

4.1.2.5 Ice should be made from potable water and shall be manufactured, handled, stored and used so as to protect it from contamination.

4.1.2.6 An adequate supply of hot potable water at no less than 82°C should be available during the working hours.

4.1.2.7 All waste and inedible material resulting from the preparation and processing of meat and meat products, and refuse should be removed promptly and in such a manner as to avoid contamination of meat or meat products, potable water, equipment, floors and walls. Appropriate steps should be taken to ensure that waste and inedible materials do not provide food for rodents and vermin, and that inedible material is not used for human consumption.

4.1.2.8 Adequate natural or artificial lighting which does not alter colours should be provided throughout the establishment. The intensity should be not less than:

- 540 lux at all inspection points,
- 220 lux in work rooms, and
- 110 lux in other areas.

Light bulbs and fixtures suspended over meat at any step of preparation should be of safety type or otherwise protected to prevent contamination of meat and meat products in case of breakage.

4.1.2.9 Adequate ventilation should be provided to prevent excessive heat, steam and condensation and to ensure that the air in the premises is not contaminated with odours, dust, vapour or smoke. Ventilation openings should be suitably screened. Windows should be fitted with whole panes and those which open should be screened. The screens should be so made as to be easily removable for cleaning. Internal window sills, if present, should be sloped to prevent their use as shelves.

4.1.2.10 All doors should have smooth impervious surfaces and be sufficiently wide. The doors opening from departments where edible meat is handled, unless provided with an effective and operating air screen, should be solid, as far as practicable self-closing, or close-fitting double action.

4.1.2.11 All stairs located in any room used in any department where edible meat is handled should be so constructed that:

- a) these are capable of being easily cleaned and no contamination may be caused by the material passing through the risers or treads, and
- b) these should have side curbs with a minimum height of 100 mm measured at the leading edge of the treads.

4.1.2.12 Lift cages should be so constructed as to afford adequate protection of the meat against contamination. In particular, the base and sides should be finished to a smooth impervious surface. Lift shafts should be smoothly finished or tiled. If painted, a light colour should be used. The floor of lift shafts should be so drained as to permit effective cleaning.

4.1.2.13 Platforms, ladders, chutes and similar equipment in any room used for the preparation or processing of meat and meat products should be so constructed as to be capable of being effectively cleaned and should consist of material which is resistant to breakage, abrasion or corrosion and which may be effectively cleaned. Where chutes are provided, these should be constructed with inspection and cleaning hatches.

4.1.2.14 Floor drains should be kept in good condition and repair with strainers in place.

4.1.2.15 All rooms used for boning, preparation, processing, packing of meat and meat products should be equipped with adequate facilities for washing hands. The facilities should be furnished with waste pipes leading to drains and conveniently located for the use of personnel during operations. The water used for washing of hands should be warm. Taps of hand-washing facilities should not be of a hand-operable type. An adequate supply of odourless liquid soap or other cleansing agents should be provided.

4.1.2.16 All rooms used for boning, preparing and packing of meat and meat products should be equipped with adequate facilities for cleaning and disinfecting materials, conveniently located for the use of personnel during operations. These facilities should be for use exclusively in the cleaning and disinfection of knives, steels, cleavers, saws and other instruments. All facilities for cleaning and disinfecting instruments should be of such nature and size as to permit proper cleaning and disinfection of instruments. These facilities should be of corrosion-resistant materials and should be capable of being easily cleaned. All facilities for cleaning and disinfecting of instruments should be fitted with suitable means of supplying water in sufficient quantity at a temperature of not less than 82°C at all times while meat or meat products are being handled in that part of the establishment.

4.1.3 Every establishment should include the amenities specified in **4.1.3.1** and **4.1.3.2**.

4.1.3.1 Adequate changing-room accommodation, drying room, lunch room, toilets with flushing water-closets, showers and hand-washing facilities which should have adequate lighting, ventilation and heating. These should not open directly to any work areas. Hand-washing facilities with hot and cold water with taps of a non-hand-operable type and suitable hygienic means of drying the hands should be provided adjacent to every toilet. Where paper towels are used, a sufficient number of dispensers with paper towels and receptacles for used towels should be provided adjacent to each washing facility. Waste from these facilities should not join the plant effluent system prior to the final save-all.

4.1.3.2 Office accommodation should be provided for the exclusive use of the meat inspection service. Laboratory facilities should be readily available for the purpose of meat inspection and meat hygiene.

4.2 Equipment and Utensils

4.2.1 All equipment, instruments and utensils used in establishments which come in contact with meat and meat products should have a smooth impervious surface and be resistant to corrosion. These should be made of a material which does not transmit odour or taste, is nontoxic, free from pits and crevices, nonabsorbent and capable of withstanding repeated exposure to normal cleaning and disinfection. Stationary equipment should be installed in such a manner as will permit easy access and thorough cleaning and disinfection. Such equipments should be so constructed that these may be easily cleaned.

4.2.2 Equipment and utensils used for inedible or condemned materials should be so identified and should not be used for edible products.

4.2.3 No containers, particularly wooden crates, wooden boxes or cartons, should be assembled in any part of an establishment in which meat or meat products are prepared, processed, handled, packed or stored. No containers, equipment or utensils should be stored in any part of the establishment in which meat or meat products are prepared, processed, handled, packed or stored, unless the container, equipment or utensils are reserved for use in that part.

4.3 Hygienic Operating Requirements

4.3.1 Rooms should be kept in good repair and clean at all times, and as far as practicable, free from steam, vapour and surplus water.

4.3.2 Amenities provided for the use of employees and the meat inspection service including the meat inspection office space, should be kept clean at all times.

4.3.3 If a room normally used for the handling, preparation, processing, packaging or storage of meat and meat products is used for any other purpose, proper sanitization and disinfection should be carried out immediately after such use.

4.3.4 If meat is boned and trimmed in rooms other than rooms under temperature control, the room and all equipment and utensils should be cleaned at least every four hours.

4.3.5 Any cooking or smoking of meat products should be done in separate areas suitably equipped for this purpose.

4.3.6 All equipment, implements, tables, utensils including knives, cleavers, knife pouches, saws and containers should be cleaned at frequent intervals during the day, and immediately and thoroughly cleaned and disinfected whenever these come in contact with diseased material, infective material or become contaminated. These shall also be cleaned and sanitized or disinfected at the conclusion of each working day.

4.3.7 The manager should ensure that washing, cleaning and sanitization or disinfection are carried out in compliance with this code.

4.3.8 Meat or meat products should not be contaminated during cleaning or sanitization or disinfection of rooms, equipment or utensils.

4.3.9 Immediately after cessation of work for the day, or at such other times as may be required, the floor and walls should be thoroughly cleaned.

4.3.10 If any skip or trolley or any container used in a department where edible material is handled enters an area where inedible material is handled, it should be cleaned and sanitized or disinfected immediately before re-entering any edible department.

4.3.11 Detergents, sanitizing agents and disinfectants should conform to public health requirements and should not be allowed to come into contact with meat or meat products. Any residue of these cleaning agents used for the washing of floors, walls or edible product equipment should be removed by thorough rinsing with potable water before the area or equipment is again used for handling meat or meat products. Prior to use of the equipment any residue of sanitizing agents or disinfectants should be removed by thorough rinsing with potable water.

4.3.12 No cleaning preparation or material or any paint likely to contaminate meat or meat products should be used in any establishment where any meat or meat product is or may be prepared, processed, handled, packaged or stored.

4.3.13 Except as required for purposes of hygiene, no substance which may contaminate meat or meat products should be handled or stored in any part of any establishment in which meat or meat products are prepared, processed, handled, packed or stored. However, materials employed in the construction or maintenance of an establishment may be used at any time except when an inspector is satisfied that there would be danger of contamination of meat or meat products.

4.4 Pest Control

4.4.1 An effective and continuous programme for the control of insects, birds, rodents or other vermin within the establishment should be maintained.

4.4.2 Establishments and surrounding areas should be regularly examined for evidence of infestation with insects, birds, rodents or other vermin.

4.4.3 Should pests gain entrance to establishments, approved eradication measures should be instituted. The eradication of pests should always be carried out under skilled supervision and with the full knowledge of the inspector.

4.4.4 Only pesticides approved for use by competent authority should be used in the establishment and great care should be exercised to prevent any contamination of the meat or meat products. Pesticides should only be employed if other precautionary methods cannot be used effectively.

4.4.5 Before pesticides are applied, all meat and meat products should be removed from the room and all equipment and utensils covered. After spraying, the equipment and utensils should be thoroughly washed before these are used again.

4.4.6 Pesticides or other toxic substances should be stored in separate locked rooms or locked cabinets, and dispensed or handled only by authorized and properly trained personnel. Every precaution should be taken to avoid contamination of meat or meat products.

4.5 No animals should be allowed to enter the establishments.

4.6 Employee Hygiene

4.6.1 Every person employed for meat handling in the factory shall be medically examined by an authorized registered medical practitioner and the examination shall include examination of sputum and X-ray of the chest for tuberculosis. The examination shall also include examination of stool for protozoal and helminthic infestation for those parasites which are transmitted by ingestion, and for the presence of enteropathogenic *Escherichia coli*, *Salmonella*, *Shigella* species and *Vibrio cholerae*. Subsequently, the employee shall be medically examined once in a year or more frequently, if necessary, to ensure that he or she is medically fit and free from communicable diseases. A record of such examination shall be maintained.

4.6.1.1 It shall be impressed on all employees that they should notify the medical officer or management, cases of fever, vomiting, diarrhoea, typhoid, dysentery, boils, cuts and sores and ulcers (however small), discharging ears and notifiable diseases occurring in their own homes.

4.6.1.2 No worker who is suspected to be suffering from any of the disorders listed in **4.6.1.1** shall be permitted to work inside the unit. The supervisor shall check the personal hygiene of the workers before the start of work and whenever they enter any processing room after any absence.

4.6.2 Employees shall keep their finger nails short and clean and wash their hands with soap or detergent and water before commencing work and after each absence, specially after using sanitary conveniences. Roller towels used for wiping hands should be clean. No worker shall allow his hands or any part of his body other than necessary for actual work or clothing to come in contact with the meat. He or she should adopt strict hygienic practices so as to avoid adding any microbial contamination to the material.

4.6.3 All employees shall be inoculated and vaccinated against the enteric groups of diseases once a year and against smallpox once in two years. In case of an epidemic all workers shall be inoculated. A record shall be maintained.

4.6.4 No worker shall be allowed to work without proper clothing and footwear.

4.6.5 Employees shall be provided with clean uniforms (preferably white) or aprons or both and clean washable caps, where necessary.

4.6.5.1 Separate room or place for changing the clothes shall be provided. The clothes shall not be hung in any processing room.

4.6.5.2 The uniforms shall not be worn outside the establishment but put on just before starting the work and changed when leaving.

4.6.6 Eating, spitting, nose cleaning or the use of tobacco in any form or chewing betel leaves shall be prohibited within the processing, packing and storage area of the unit. Notice to this effect shall be prominently displayed and enforced.

4.7 Operating Practices and Production Requirements

4.7.1 Where the inspector considers that the manner in which meat or meat products are being prepared, processed, handled, stored or packaged will adversely affect: (a) the cleanliness of the meat and meat product, (b) the hygiene of production, or (c) the efficiency of inspection of meat and meat products, he may advise the manager to take action to correct the deficiency or to reduce the rate of production or to suspend operations for the time being in any specified section of the establishment.

4.7.2 Raw Material Handling and Manufacture

4.7.2.1 No meat or meat products should be accepted by an establishment unless these have been derived from animals subjected to ante-mortem and post-mortem inspection (*see* IS:1982-1971* and IS:6559-1972†). These should not be accepted unless properly branded or marked and are in every way suitable for human consumption, and that these have not, subsequent to being examined by an inspector, been exposed to contamination or processed or handled or subjected to the addition of any harmful substance which renders these unfit for human consumption.

4.7.2.2 Meat and meat products should be handled, stored or transported in an establishment in a manner that will protect these from contamination and deterioration.

*Code of practice for ante-mortem and post-mortem inspections of meat animals (*first revision*).

†Code of practice for ante-mortem and post-mortem inspection of poultry.

IS:8182-1976

4.7.3 Raw materials and semi-processed goods should be kept separated from outgoing finished products.

4.7.4 All steps in the production process, including packaging, should be performed as rapidly as possible and under conditions which will prevent the possibility of deterioration or the contamination by pathogenic and spoilage micro-organisms.

4.7.5 Equipment, such as trays, vats, tables, etc, should not be used interchangeably for raw products and cooked products unless these are completely cleaned and sanitized or disinfected before moving to the area designated for cooked products. Exposed ready-to-eat or cooked products should not be stored in the same room with raw meat.

4.7.6 The operation of boning and trimming should always be carried out as rapidly as possible, and meat should not be allowed to accumulate in rooms used for boning and trimming.

4.7.7 *Storage*

4.7.7.1 The following provisions should apply where meat or meat products are stored in chilling rooms, freezing rooms or frozen storage as the case may be:

- a) Entry should be restricted to personnel necessary to carry out operations efficiently;
- b) Doors should not be left open for extended periods and should be closed immediately after use;
- c) Chilling room, freezing room or freezer store should not be loaded beyond its designed capacity;
- d) Where refrigeration equipment is not manned, automatic temperature recorders should be installed;
- e) If no automatic device is installed, temperatures should be read at regular intervals and the readings recorded in a log book; and
- f) A record should be maintained of all meat placed in or taken out of the chilling room, freezing room or freezer store at the end of a working day.

4.7.7.2 In chilling rooms, attention should be paid to the following provisions in addition to those given in **4.7.7.1**:

- a) Temperature, relative humidity and air flow should be maintained at a level suitable for the preservation of meat and meat products.

- b) Condensation should be prevented by the efficient operation of refrigeration facilities combined with proper insulation of walls and ceilings, the application of heat near the ceilings, or by any other suitable method. If overhead refrigerating coils are installed, insulated drip pans should be placed beneath them. All floor type refrigerating units should be placed within curbed and separately drained areas unless located adjacent to floor drains.

4.7.7.3 Where meat and meat products to be stored are placed in any freezer store, attention should be paid to the following provisions in addition to those given in **4.7.7.1**:

- a) Meat or meat products should not be stacked directly on the floor but should be placed on pallets or on dunnage in such a way as to allow adequate air circulation.
- b) The freezer store should be operated at a temperature which will give adequate protection to the type of product. Temperature fluctuations in the freezer store should be kept to a minimum. Where unpackaged meat is stored, the temperature difference between the evaporator and the meat should be kept to a minimum.
- c) Refrigeration coils should be defrosted as required to prevent excessive accumulation of ice and loss of refrigeration efficiency. Provision should be made for removal, without affecting the product, of water resulting from defrosting.

4.7.8 *Transportation*

4.7.8.1 Meat or meat products should not be carried in any means of transport which is used for conveying live animals.

4.7.8.2 Meat or meat products should not be carried in the same means of transport as other goods in a way which may adversely affect the meat or meat products.

4.7.8.3 Meat or meat products should not be placed in any means of transport which has not been cleaned before loading and if necessary also sanitized.

4.7.8.4 Means of transport of containers for meat and meat products should comply with the following conditions:

- a) All internal finishes should be made of corrosion-resistant material, be smooth, impervious and easy to clean and sanitize. Joints and doors should be sealed so as to prevent the entry of pests and other sources of contamination.

- b) The design and equipment should be such that the required temperature may be maintained throughout the whole period of transport.
- c) Vehicles intended for the transport of meat and meat products should be equipped in such a manner that the meat and meat products do not come into contact with the floor.

4.7.9 Packaging of Finished Product — Packaging material should be stored in a separate room.

4.7.9.1 Meat products should be packaged in a manner which will protect them from contamination and deterioration under normal conditions of handling, transportation and storage.

4.7.9.2 The packing material should be nontoxic and should not leave harmful deposits of any kind on the product or otherwise contaminate it.

4.7.9.3 Packaging should be done under conditions that preclude the contamination of the product.

4.7.10 Preservation of Finished Product — Requirements for the preservation of specific groups of meat products are given in Appendix A.

4.7.11 The finished product should be stored well off the floor and transported under such conditions as will preclude contamination, infestation and deterioration of the product of the container.

4.8 Sanitation Control Programme

4.8.1 All aspects of processing, handling, storage, etc, should be inspected and supervised by a veterinarian. In particular, care should be taken that for every establishment at least one veterinarian is appointed for the supervision of meat hygiene.

4.8.2 It is desirable that each establishment should designate a single individual, whose duties are preferably divorced from production, to be held responsible for the cleanliness of the establishment. His staff should be a permanent part of the organization or employed by the organization and should be well-trained in the use of special cleaning tools, methods of dismantling equipment for cleaning and in the significance of contamination and the hazards involved. A permanent cleaning and sanitization or disinfection schedule should be drawn up to ensure that all parts of the establishment are cleaned appropriately and that critical areas, equipment and material are designated for cleaning or sanitization or disinfection or both daily or more frequently, if required.

4.9 Laboratory Control Procedures — In addition to the routine control carried out by the meat inspection services, it is desirable that each establishment should have access to laboratory control. Analytical procedures used should follow recognized or standard methods in order that the results may be readily interpreted.

5. REQUIREMENTS FOR END PRODUCTS

5.1 Appropriate methods should be used for sampling and analysis or determination to test the conformity of the quality of the meat products to the quality stipulated in the individual Indian Standards. However, the general guidelines should be as given in **5.1.1** to **5.1.3**.

5.1.1 The products should be free from foreign matter to the extent possible in good manufacturing practice, as well as free from toxic substances in concentrations believed to constitute a health hazard.

5.1.2 The products should not contain micro-organisms which if able to proliferate or present in such numbers as would cause degradation of the products, nor contain pathogenic micro-organisms in amounts that would constitute a health hazard and should also not contain any toxic substances produced by micro-organisms in a concentration that would constitute a health hazard.

5.1.3 The products should comply with the requirements for pesticide residues and food additives laid down by the local authority.

A P P E N D I X A

(Clause 4.7.10)

REQUIREMENTS FOR PRESERVATION OF SPECIFIC GROUPS OF MEAT PRODUCTS

A-1. PRESERVATION OF MEAT PRODUCTS IN HERMETICALLY SEALED RIGID METAL CONTAINERS

A-1.1 The products packed in hermetically sealed rigid metal containers should be so processed that these present no public health hazard and withstand spoilage during subsequent storage, transport and sale. The temperature and duration of processing of specific formulations of canned meats should be based on the recommendations of technical specialists competent in canning technology.

A-1.2 Processing should be supervised in the establishment by technically competent personnel and be subject to check by the inspector. Same measurements should be made regularly during production and these, with processing records adequate to identify the processing and history of each batch of product, should be kept by the management and made available to the inspector.

A-1.3 No water, other than potable water, should be used for washing of empty containers or for the cooking or cooling of any hermetically sealed container. Where heat processed containers are cooled in water, any recirculated water should be filtered and treated by the addition of chlorine. Such water, depending upon the potential degree of non-potability, should contain from 1 to 2 mg/kg of residual chlorine at the discharge end of the cooler. Any other acceptable disinfectant may be used in effective concentration in place of chlorine.

A-1.4 Rough treatment of containers both before and after processing shall be avoided to prevent the possibility of contamination of the processed product. If it is essential to handle wet cans, personnel should do so exercising hygienic precautions. Belts, runways, and other can-conveying equipment should be maintained in a clean condition and good repair.

A-1.5 Processed hermetically sealed containers should be inspected and any defective container rejected.

A-1.6 Adequate facilities should be provided for the incubation of random samples of individual batches of containers and, after establishment of a satisfactory history for the product involved, batches may be released provided the appropriate authority is assured that the product will be returned, if required.

A-1.7 Every container should be permanently marked, in code or otherwise, to identify the establishment, country and date of production of meat and meat products.

A-2. PRESERVATION OF MEAT PRODUCTS HEAT-TREATED PRIOR TO PACKAGING (OPEN PACK MEAT PRODUCTS)

A-2.1 In establishments where open-pack meat products are heat-treated prior to packaging, chilling facilities should be available for holding raw meat on its reception and for storing boned, and cut or otherwise prepared raw meat which is not transferred directly to the sections in which it is cooked or otherwise processed. During boning and cutting of the raw meat and mixing of the meat product, the temperature of the meat or raw material mix should not exceed 7°C.

A-2.2 Open-pack meat products should be heat-treated, handled subsequent to heat treatment, and packaged in such a way that contamination is kept to a minimum so that these present no public health hazard and withstand spoilage under the conditions of handling storage, transport and sale indicated on the label. Particular care shall be taken to prevent cross-contamination from raw meat, preferably by physical separation of processing areas where exposed processed cooked meat products are handled.

A-2.3 The temperature and duration of the cooking process for open-pack heat-treated meat products should be such that the heat treatment alone or in combination with other preserving processes protects public health.

A-2.4 On arrival in the cooking section, the meat products should be placed in the cookers without delay. Cooking processes should be supervised by technically competent personnel and be subject to check by the appropriate authority. Cooking operations should be controlled by a suitable recording device. Processing records adequate to identify the processing and history of each batch of products should be kept by the management and made available to the appropriate authority, if asked for.

A-2.5 There should be adequate means for rapid chilling in a hygienic manner, of any cooked meat product which has only been preserved by heat to an internal temperature of 7°C. Water used for cooling any meat product should be of potable quality, be fast-flowing or used in the form of sprays and should not be recirculated.

A-2.6 At all stages following cooking, manual handling of exposed meat products should be kept to an absolute minimum and, if at all possible, should be replaced by mechanical methods. Where manual handling of exposed meat products is unavoidable, gloves made of impermeable material, either disposable or easily cleaned and disinfected, should be worn.

A-2.7 Packaging of meat products preserved by heat treatment should be carried out in a separate room used only for this purpose. Packaged finished meat products should be inspected to ensure the detection of any visibly defective packages. Only properly sealed and unbroken packages should be released from the establishment.

A-2.8 Open-pack meat products requiring refrigeration should be stored in chilled accommodation used only for this purpose.

A-2.9 Adequate laboratory facilities should be available for the purpose of making routine bacteriological examinations of meat products. Routine bacteriological checks should be made of all equipment and of all food contact surfaces to ensure that cleansing and disinfecting procedures have been satisfactory.

A-2.10 Every package of the open-pack meat product should be permanently marked, in code or otherwise, to identify the establishment, country and date of production.

INDIAN STANDARDS

ON

FOOD HYGIENE

IS:

- 2491-1972 Code for hygienic conditions for food processing units (*first revision*)
- 4303 (Part I)-1975 Code of hygienic conditions for fish industry: Part I Pre-processing stage (*first revision*)
- 4303 (Part II)-1975 Code of hygienic conditions for fish industry: Part II Canning stage (*first revision*)
- 5059-1969 Code for hygienic conditions for large scale biscuit manufacturing units and bakery units
- 5404-1969 Code of practice for handling of food samples for microbiological grade
- 5837-1970 Code for hygienic conditions for soft drinks manufacturing units
- 5839-1970 Code for hygienic conditions for manufacture, storage and sale of ice-creams
- 6540-1972 Code for hygienic conditions for manufacture and handling of ice for human consumption
- 6541-1972 Code for hygienic conditions for establishment and maintenance of mid-day school meal programme
- 6542-1972 Code for hygienic conditions for fruit and vegetable canning units
- 6968-1973 Code for hygienic conditions for *PAN* (betel leaf) stalls and vendors
- 6969-1973 Code for hygienic conditions for handling and sale of refrigerated drinking water
- 7003-1973 Code for hygienic conditions for sago (*SABOODANA*) manufacturing units
- 7005-1973 Code for hygienic conditions for production, processing, transportation and distribution of milk
- 7802-1975 Code of hygienic conditions for sweetmeat shops
- 8123-1976 Code of hygienic conditions for sale of cut-fruits, fruit juice and fruit salad
- 8124-1976 Code of hygienic conditions for sale of sugarcane juice
- 8182-1976 Code of hygienic conditions for processed meat products